

NOV 03 2006

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Attorney Docket No. 2916-0133P
Page 2 of 16IN THE CLAIMS:

This listing of claims will replace all prior versions, and listing, of claims in the application:

1. (Currently Amended) The data broadcast system of claim 44, For use with a broadcast system operable to carry digital packets to multiple recipients simultaneously, wherein the content liaison unit includes comprising:

a content provider (CP) interface to receive, from the at least one content provider unit, a specification of the digital content that is to be inserted into said the broadcast system signal and an insertion schedule by which said the digital content is to be inserted into said the broadcast system signal, wherein said digital content pertains to data broadcasting;

a collection unit, responsive to said the CP interface, to collect digital files of said the digital content by at least one of actively retrieving and reactively receiving said the digital files from a source thereof identified in said the specification; and

an insertion unit, responsive to said the CP interface, to transfer said the digital files from said the collection unit to said the broadcast system according to said the insertion schedule.

2. (Currently Amended) The liaison unit data broadcasting system of claim 1, wherein said the collection unit includes memory into which said the collection unit is operable configured to store said the digital files so as to decouple, in time, the collection and the transfer of said the digital files.

3. (Currently Amended) The liaison unit data broadcasting system of claim 1, wherein:

said the content provider unit is a first content provider unit, said the specification is a first specification and said the insertion schedule is a first insertion schedule;

said the CP interface also is operable configured to receive, from a second content provider unit, a second specification of second digital content that is to be inserted into said the broadcast system signal and a second insertion schedule by which said the second digital content is to be inserted into said the broadcast system signal;

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~~saidthe~~ collection unit also is ~~operable-configured~~ to collect ~~saidthe~~ second digital content by at least one of actively retrieving and reactively receiving ~~saidthe~~ second digital content from a source thereof identified in ~~saidthe~~ second specification;

~~saidthe~~ insertion unit also being ~~operable-configured~~ to transfer ~~saidthe~~ second digital content from ~~saidthe~~ collection unit to ~~saida~~ mixing unit according to ~~saidthe~~ second insertion schedule.

4. (Currently Amended) The ~~liaison-unit~~data broadcasting system of claim 3, wherein ~~saidthe~~ first specification, ~~saidthe~~ first insertion schedule, ~~saidthe~~ second specification and ~~saidthe~~ second insertion schedule are provided to ~~saidthe~~ CP interface using a common communications protocol.

5. (Currently Amended) The ~~liaison-unit~~data broadcasting system of claim 1, wherein ~~saidthe~~ specification includes at least one of the following:

a characterization of the type of ~~saidthe~~ digital content;

a resource locator to define a location where ~~saidthe~~ digital content can be obtained by ~~saidthe content~~ liaison unit;

a transfer schedule by which ~~saidthe content~~ liaison unit is to obtain ~~saidthe~~ digital content;

an indication of whether ~~saidthe content~~ liaison unit will actively retrieve or responsively receive ~~saidthe~~ digital content from a source of ~~saidthe~~ digital content;

an indication of whether ~~saidthe~~ digital content is to be compressed by ~~saidthe corresponding content provider unit~~ or by ~~the saidcontent~~ liaison unit;

an indication of whether ~~saidthe~~ digital content is to be encrypted by ~~saidthe corresponding content provider unit~~ or by ~~saidthe content~~ liaison unit; and

an indication of whether ~~saidthe~~ digital content is to undergo forward error correction transformations by ~~saidthe corresponding content provider unit~~ or by ~~the saidcontent~~ liaison unit.

6. (Currently Amended) The ~~liaison-unit~~data broadcasting system of claim 5, wherein ~~saidthe~~ transfer schedule includes a first set of at least one time for ~~saidthe~~ digital

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content to be collected and a second set of at least one time for ~~said~~the digital content to be transferred, ~~said~~the second set being different than ~~said~~the first set.

7. (Currently Amended) The ~~liaison-unit~~data broadcasting system of claim 1, wherein ~~said~~the content liaison unit is sufficiently robust to interpret a valid insertion schedule whenever ~~said~~the insertion schedule is defined in terms of each of the following scheduling parameters taken alone or in combination:

a start time of a time slot during which an item can be output from ~~said~~the content liaison unit to ~~said~~the broadcast system;

an end time for ~~said~~the time slot;

a duration (D) of ~~said~~the time slot;

a time interval (INT) between successive outputs of ~~said~~the item from ~~said~~the content liaison unit to ~~said~~the broadcast system during ~~said~~the time slot;

a number (N) of times that ~~said~~the item is to be output from ~~said~~the content liaison unit to ~~said~~the broadcast system during a time slot;

a size (S) of ~~said~~the item; and

a bitrate (BTR) at which ~~said~~the item is to be output from ~~the~~said content liaison unit to ~~said~~the broadcast system.

8. (Currently Amended) The ~~liaison-unit~~data broadcasting system of claim 7, wherein ~~said~~the insertion schedule is a microschedule;

wherein ~~said~~the CP interface is operable to receive a macroschedule including at least one recurring time slot, each recurring slot having a microschedule, respectively; and

wherein ~~said~~the insertion unit is responsive to ~~said~~the macroschedule.

9. (Currently Amended) The ~~liaison-unit~~data broadcasting system of claim 7, wherein, if two or more of ~~said~~the scheduling parameters are contradictory, then ~~the content~~said liaison unit is operable to apply at least one conflict resolution rule to ignore at least one of the contradictory scheduling parameters in order to interpret ~~said~~the insertion schedule to be valid.

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10. (Currently Amended) The ~~haisan-unit~~data broadcasting system of claim 9, wherein ~~said~~the at least one conflict resolution rule includes at least one of the rules from the following Rule Table:

Rule Table

| Parameters Specified | | | | Rule |
|----------------------|-----|---|---|---|
| INT | BTR | D | N | |
| Y | Y | Y | Y | If $INT < S/BTR$, set $INT = S/BTR$ Ignore N, Output at INT using BTR, for D (timed). |
| Y | Y | Y | N | If $INT < S/BTR$, set $INT = S/BTR$ Output at INT using BTR, for D (timed). |
| Y | Y | N | Y | If $INT < S/BTR$, set $INT = S/BTR$ Output at INT using BTR, N times (timed). |
| Y | Y | N | N | If $INT < S/BTR$, set $INT = S/BTR$ Output at INT using BTR, indefinitely (timed). |
| Y | N | Y | Y | Set BTR = account BTR, If $INT < S/BTR$, set $INT = S/BTR$ Ignore N, Output at INT using BTR, for D (timed). |
| Y | N | Y | N | Set BTR = account BTR, If $INT < S/BTR$, set $INT = S/BTR$ Output at INT using BTR, for D (timed). |
| Y | N | N | Y | Set BTR = account BTR, If $INT < S/BTR$, set $INT = S/BTR$ Output at INT using BTR, N times (timed). |
| Y | N | N | N | Set BTR = account BTR, If $INT < S/BTR$, set $INT = S/BTR$ Output at INT using BTR, indefinitely (timed). |
| N | Y | Y | Y | Set $INT = D/N$, If $INT < S/BTR$, set $INT = S/BTR$ Output at INT using BTR, for D (timed). |
| N | Y | Y | N | Set $INT = S/BTR$, Output at INT using BTR, for D (timed). |
| N | Y | N | Y | Set $INT = S/BTR$, Output at INT using BTR, N times (timed). |
| N | Y | N | N | Set $INT = S/BTR$, Output at INT using BTR, indefinitely (timed). |

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| Parameters Specified | | | | Rule |
|----------------------|-----|---|---|---|
| INT | BTR | D | N | |
| N | N | Y | Y | Set BTR = account BTR, Set INT = D/N, If INT < S/BTR, set INT = S/BTR Output at INT using BTR, for D, |
| N | N | Y | N | Output for D (non-timed), |
| N | N | N | Y | Output N times (non-timed), |
| N | N | N | N | Output indefinitely (non-timed). |

11. (Currently Amended) The ~~liaison-unit~~ data broadcasting system of claim 1, wherein ~~said~~the CP interface receives ~~said~~the specification and ~~said~~the insertion schedule represented as at least one XML document from the corresponding ~~said~~ content provider unit.

12. (Currently Amended) The ~~liaison-unit~~ data broadcasting of claim 1, wherein ~~said~~the specification includes an account, each account including at least one catalog, each catalog including at least one independent item to be output by ~~said~~the content liaison unit to ~~said~~the broadcast system or at least one group of related items to be output by ~~said~~the content liaison unit to ~~said~~the broadcast system, each group including a group of related items or an independent item.

13. (Cancelled)

14. (Currently Amended) The ~~liaison-unit~~ data broadcasting system of claim 1, wherein:

~~said~~the specification and insertion schedule are associated with an account; and
~~said~~the insertion unit is operable to limit an insertion-schedule-dictated transference of ~~said~~the digital content so as to comply with a bandwidth allocation for ~~said~~the account.

15. (Currently Amended) The ~~liaison-unit~~ data broadcasting system of claim 14,

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wherein saidthe insertion unit limits saidthe transference by processing saidthe insertion schedule as a plurality of incremental time slices, saidthe bandwidth allocation representing a maximum data amount of data that can be transferred in each time slice, respectively; and

wherein, if transference of saidthe maximum amount of data takes place before the end of a time slice, then saidthe insertion unit is operable to suspend the transference until a next time slice begins.

16. (Currently Amended) ~~For use with a~~The data broadcast system of claim 44,
~~system operable to carry digital packets to multiple recipients simultaneously, a~~ wherein each of
the at least one content provider unit includes comprising:

an insertion schedule generator to generate a specification of the digital content to be inserted into saidthe broadcast signalsystem and an insertion schedule by which saidthe digital content is to be inserted, ~~wherein said digital content pertains to data broadcasting; and~~

an interface to a liaison unit to provide, in a machine-readable form, saidthe specification of saidthe digital content that is to be inserted into saidthe broadcast signalsystem and saidthe insertion schedule by which saidthe digital content is to be inserted into saidthe broadcast signalsystem.

17. (Currently Amended) ~~The data broadcasting system content provider unit of~~
claim 16, further comprising a source of saidthe digital content.

18. (Currently Amended) ~~The data broadcasting system content provider unit of claim~~
16, wherein

saidthe broadcast system is a first broadcast system, saidthe machine-readable form is a first machine-readable form, saidthe specification is a first specification, and saidthe insertion schedule is a first insertion schedule; and

saidthe corresponding content provider unit is ~~operable configured to~~ provide to a second broadcast system, in a second machine-readable form, a second specification of second digital content that is to be inserted into saidthe broadcast signalsystem and a second insertion schedule by which saidthe second digital content is to be inserted into saidthe broadcast systemssignal.

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19. (Currently Amended) The ~~data broadcasting system~~content provider unit of claim 18, wherein each of ~~said~~the first machine-readable form and ~~said~~the second machine-readable form is compliant with a common protocol.

20. (Currently Amended) The ~~content provider~~data broadcasting system of claim 16, wherein ~~said~~the specification includes at least one of the following:

a characterization of the type of ~~said~~the digital content;

a resource locator to define a location where ~~said~~the digital content can be obtained by a broadcaster unit;

a transfer schedule by which ~~said~~the broadcaster unit is to obtain ~~said~~the digital content;

an indication of whether ~~said~~the broadcaster unit will actively retrieve or responsively receive ~~said~~the digital content from a source of ~~said~~the digital content;

an indication of whether ~~said~~the digital content is to be compressed by a content provider or by ~~said~~the liaison unit;

an indication of whether ~~said~~the digital content is to be encrypted by ~~said~~the corresponding content provider unit or by ~~said~~the content liaison unit; and

an indication of whether ~~said~~the digital content is to undergo forward error correction transformations by ~~said~~the corresponding content provider unit or by ~~said~~the content liaison unit.

21. (Cancelled)

22. (Currently Amended) The ~~content provider unit~~data broadcasting system of claim 16, wherein ~~said~~the machine-readable form is a first machine-readable form, and ~~said~~the specification is a first specification and ~~said~~the insertion schedule is a first insertion schedule, ~~said~~the first specification and ~~said~~the first insertion schedule corresponding to a first account maintained by ~~said~~the corresponding digital content provider unit, ~~said~~the first account being bounded by a first bandwidth allocation; and

~~said~~the corresponding content provider unit is ~~operable~~configured to provide, to ~~said~~the broadcast system in a second machine-readable form, a second specification of second digital

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content that is to be inserted into ~~said~~the broadcast ~~system-signal~~ and a second insertion schedule by which ~~said~~the second digital content is to be inserted into ~~said~~the broadcast ~~system~~signal, ~~said~~the second specification and ~~said~~the second insertion schedule corresponding to a second account maintained by ~~said~~the ~~corresponding~~ content provider unit, ~~said~~the second account being bounded by a second bandwidth allocation different than ~~said~~the first bandwidth allocation.

23. (Currently Amended) The ~~content-provider-unit~~data broadcasting system of claim 16, wherein ~~said~~the insertion schedule generator is sufficiently robust to generate a valid insertion schedule in terms of each of the following scheduling parameters taken alone or in combination:

- a start time of a time slot during which an item can be output from ~~said~~the ~~content~~ liaison unit to ~~said~~the broadcast system;

- an end time for ~~said~~the time slot;

- a duration of ~~said~~the time slot;

- a time interval between successive outputs of ~~said~~the item from ~~said~~the ~~content~~ liaison unit to ~~said~~the broadcast system during ~~said~~the time slot;

- a number of times that ~~said~~the item is to be output from ~~said~~the ~~content~~ liaison unit to ~~said~~the broadcast system during a time slot;

- a size of ~~said~~the item; and

- a bitrate at which ~~said~~the item is to be output from ~~said~~the ~~content~~ liaison unit to ~~said~~the broadcast system.

24. (Currently Amended) The ~~content-provider-unit~~data broadcasting system of claim 23, wherein ~~said~~the insertion schedule is a microschedule, and

wherein ~~said~~the insertion schedule generator is ~~operable-configured~~ to provide a macroschedule including at least one recurring time slot, each recurring slot having a microschedule, respectively.

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25. (Currently Amended) The ~~content provider unit~~data broadcasting system of claim 16, wherein ~~said~~the machine readable form includes representation of ~~said~~the specification and ~~said~~the insertion schedule as at least one XML document.

26. (Currently Amended) The ~~content provider unit~~data broadcasting system of claim 16, wherein ~~said~~the specification includes an account,

each account including at least one catalog, each catalog including at least one independent item to be output by ~~said~~the content liaison unit to ~~said~~the broadcast system or at least one group of related items to be output by ~~said~~the content liaison unit to ~~said~~the broadcast system, each group including a group of related items or an independent item.

27 – 34. (Cancelled)

35. (Previously Presented) A method as embodied in elements which form the content liaison unit of claim 1.

36. (Previously Presented) A computer-readable medium having embodied thereon at least one program to cause at least one processor to implement the content liaison unit of claim 1.

37. (Previously Presented) A method as embodied in elements which form the content provider unit of claim 16.

38. (Previously Presented) A computer-readable medium having embodied thereon at least one program to cause at least one processor to implement the content provider unit of claim 16.

39 – 43. (Cancelled)

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44. (Currently Amended) A data broadcast system for use with a broadcast system operable to carry digital packets to multiple recipients simultaneously, the data broadcast system comprising:

at least one content provider unit to generate a-specifications of digital content and an insertion instructionschedule for inserting by which the digital content is to be inserted into a broadcast signal, wherein the digital content pertains to data broadcasting; and

a content liaison unit to allocate a bandwidth profile to each of the at least one content provider unit, communicate with the content provider unit over a communications network, to receive the specifications of digital content and the insertion instructionschedule from the each of the at least one content provider unit over the communications network, and to insert the digital content into the broadcast signal according to the insertion instructions based on the bandwidth profile allocated to each of the at least one content provider unitschedule,

wherein the bandwidth profiles are communicated from the content liaison unit to the at least one content provider unit over a communication network, and the specifications of digital content and the insertion instructions are communicated from the at least one content provider unit to the content liaison unit over the communication network, and

wherein the insertion instructions generated by each content provider unit completely determines a time at which each digital content item referenced in the corresponding specifications of digital content is inserted into the broadcast signal, independently of the insertion instructions generated by any other content provider unit.

45. (Previously Presented) The data broadcast system of claim 44, wherein the broadcast signal into which the digital content is inserted contains therein video and/or audio program content.

46. (Currently Amended) The data broadcast system of claim 44, wherein prior to the allocation, the at least one content provider unit and the content liaison unit negotiate with each other over the communications network regarding the allocation of the bandwidth profileste
allocate a bandwidth for the digital content specified by the content provider unit.

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47. (Previously Presented) The data broadcast system of claim 44, further comprising:
at least one receiver device to receive the broadcast signal including the digital content
and to extract data from the received broadcast signal.

48-50. (Cancelled)

51. (New) The data broadcast system of claim 1, wherein the content liaison unit further
includes a bandwidth management unit configured to allocate the bandwidth profile to each of
the at least one content provider unit.